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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/644,358

08/20/2003

Banqiu Wu

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6411

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7590

02/22/2006

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EXAMINER

AHMED, SHAMIM

ART UNIT

PAPER NUMBER

1765

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/644,358

Applicant(s)

WU ET AL.

Examiner

Shamim Ahmed

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-93 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-93 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings were received on 12/9/05. These drawings are acceptable.

### ***Response to Arguments***

2. Applicant's arguments filed 12/9/05 have been fully considered but they are not persuasive. Applicant's argument is not commensurate with the claim such as claims are not limited to directly detecting the changes in output signals of components of the AMN.

Applicants also argue that Patrick et al do not teach or suggest directly detecting such limitation.

In response to the argument, examiner states that the argument is more specific than the claims.

Examiner also states that Patrick et al's detecting the endpoint of a process by measuring changes in the AMN component and this measuring is obviously detected and displayed by the AMN and which is an indication of the endpoint detection of the process.

Therefore, the detection is direct measurement of the predetermined change in the process parameter as taught by Patrick et al (see the rejection).

So, the previous office action is repeated herein as follows:

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art (AAPA, herein after) in view of Patrick et al (5,407,524).

AAPA discloses a process for making photo mask utilizing a plasma etching process including the steps of:

- providing a typical binary photo mask blank comprising a photosensitive resist on the top of the blank photo mask (paragraph 0003 at page 2);  
exposing the photosensitive resist layer for creating exposed (soluble) and unexposed (insoluble) portion and removing the soluble portion in order to expose an underlying layer (paragraph 0004);
- performing a dry etching may include plasma-assisted etch such as reactive ion etching (RIE) on the underlying layer (paragraph 0005).

AAPA fails to teach defining an endpoint and controlling the plasma etching process by monitoring at least one of parameters, wherein the parameter could comprises an automatic matching network parameter of the plasma etching process.

However, Patrick et al disclose an endpoint detection in plasma etching process by monitoring at least one plasma processing parameters such as components of an automatic matching network which is simple, cost effective ad reliable (col.3, lines 3-17 and also see col.5).

Patrick et al also disclose that one of the parameter such as in put voltage can be amplified to a desired value depending on the detected change in the matching network and needs to be adjusted (col.5, lines 10-28).

Patrick et al further teach that controlling the etching process with the use of a microprocessor that represents detection of the endpoint of the process (col.5, lines 60-col.6, lines 1-18).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to employ Patrick et al's teaching into AAPA's process for efficiently detecting the plasma etching process, which is simple, cost effective and reliable as taught by Patrick et al.

As to claims 9-14,41-46 and 71-76, Patrick et al teach that controlling the process by using a microprocessor, which includes a programmable data obviously having algorithm (col.5, lines 61-68).

As to claims 29,31,61 and 90, AAPA teaches that typically the underlying layer is chromium (paragraph 0003).

As to claims 28,30,60, 62, 89 and 91, AAPA teaches commonly binary and phase shift photo masks are used in the semiconductor industries (see the paragraph 0002).

As to claims 15-16,47-50 and 77-80, AAPA teaches a radio frequency (RF) plasma and inductively coupled plasma (ICP) both are typically used in the plasma etching industries (see paragraphs 006-007).

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (571) 272-1457. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shamim Ahmed  
Primary Examiner  
Art Unit 1765

SA  
February 17, 2006